approach

APRIL 1981 THE NAVAL AVIATION SAFETY REVIEW

Single-engine secrets for twins
See page 2

Calling all shutterbugs

HOW would you like to see one of your photographs in the pages or on the cover of APPROACH? If so, have we got a deal for you!

We need a large number of black and white photographs for our general files. We want photos of aircraft (inside and out), people in aircraft, people preflighting aircraft, launches and recoveries, CATCC personnel at work, and just about anything else that involves Navy flightcrew or air control personnel. The photos should be quality black and white glossy prints, preferably 8 x 10 inches, and captioned. The caption should include the identification of the subject(s), where the photo was taken, and the name of the photographer (including rank/rate and unit). Write or type the caption on a separate piece of paper and tape it to the back of the photograph.

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Vol. 26 No. 10

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NAVAIR 00-75-510

The British Aerospace Hawk, depicted in U. S. Navy colors by R. G. Smith, is one of two McDonnell Douglas/BAe candidates for the VTX program. (Courtesy of McDonnell Douglas Corp.) Other VTX contenders will appear on upcoming covers.

Single-engine procedure

ONE thing the single-engine aircraft pilot doesn't have to worry about when his engine gives up the ghost and quits is his single-engine procedure. To a great number of pilots, single-engine procedure is a phase of aviation which has never concerned them and maybe never will. But to another large segment of aviators, single-engine procedures are a very important part of their professional knowledge and flying technique – a technique that is critical following an engine failure in a twin.

The impetus for this article was a 1976 internal FAA staff

in Twin-engine aircraft

By Mr. R. A. Eldridge
APPROACH Contributing Editor

study written by FAA engineering test pilot Les Berven. His study was entitled "Engine-Out Characteristics of Multi-engine Aircraft." Although the study was never officially released, its contents were of such impact that it recently was published in its entirety in two aviation publications, *Aviation Consumer* and the *LPBA* (Lawyer-Pilots Bar Association) *Journal*. To say that many readers, including experienced multiengine pilots, instructors, and even FAA examiners, were made aware of some facts that hitherto were not generally known, discussed, or understood is putting it mildly. The thrust of the information, although probably of more importance to relatively inexperienced light-twin aviators, may present some concepts to military aviators that were never taught or are not now being taught in flight training.

Minimum Control Speed. Very early in their career, multi-engine pilots are introduced to the term "minimum control speed" (V_{mc}) and made aware that they better understand what it is, particularly for every multiengine aircraft which they fly. Their knowledge of V_{mc}, or lack thereof, may have a serious effect on their longevity. The *Aviation Space Dictionary* (6th Edition) defines V_{mc} as: "The lowest possible speed of a multiengine aircraft, at which, at a constant power setting and aircraft configuration, the pilot is able to maintain a straight course after failure of one or more engines." It is further defined in FAR (Federal Aviation Regulations) 23.149 as "the minimum calibrated airspeed at which, when any engine is suddenly made inoperative, it is possible to recover control of the airplane with that engine still inoperative and maintain straight flight, either with zero yaw or, *at the option of the applicant, with an angle-of-bank of not more than 5 degrees.*"

The italicized portion of the definition refers to the fact that pilots relieve some of the rudder pressure by banking.

Aircraft manufacturers desire to have as low a V_{mc} as possible. To achieve this, the 5-degree bank is always used in flight testing the aircraft. The technique used in determining a manufacturer's V_{mc} consists of arriving at an airspeed sufficiently low that, when an engine is cut, an immediate bank into the good engine is required. Full rudder deflection, together with the 5-degree bank, will provide the necessary control to keep the aircraft from turning more than 20 degrees into the dead engine.

Continued

The configuration required for obtaining a manufacturer's V_{mc} certification is as follows:

1. Takeoff or maximum available power.
2. Rearmost (or "most unfavorable") allowable center of gravity.
3. Flaps to takeoff position.
4. Landing gear retracted.
5. Cowl flaps (on piston-engine aircraft) in position normally used for takeoff.
6. Maximum sea level takeoff weight.
7. Aircraft trimmed for takeoff.
8. Propeller windmilling on inoperative engine (or different position if specific design makes this more logical) and full power on other engines.
9. Aircraft airborne and out of ground effect.

Additionally, the rudder control force required to maintain control must not exceed 180 pounds.

Pilots have been taught and led to believe that as long as they are at or above V_{mc} in their aircraft, they will be able to control the aircraft after an engine fails, as long as they keep the wings within 5 degrees of the level position. This sounds simple enough, but consider the following:

On a *Cessna Conquest*, a typical light twin-engine civilian aircraft, the certificated V_{mc} is 91 knots. Yet, actual flight tests in an instrumented *Conquest* prove that when a constant heading is maintained **with the ball centered (wings level), control of the aircraft will be lost at 115 knots!!**

The "Slippin' and Slidin'" discussion in the box below was extracted from Mr. Berven's article.

There is an FAA publication called the "Multi-Engine Class

Slippin' and Slidin'

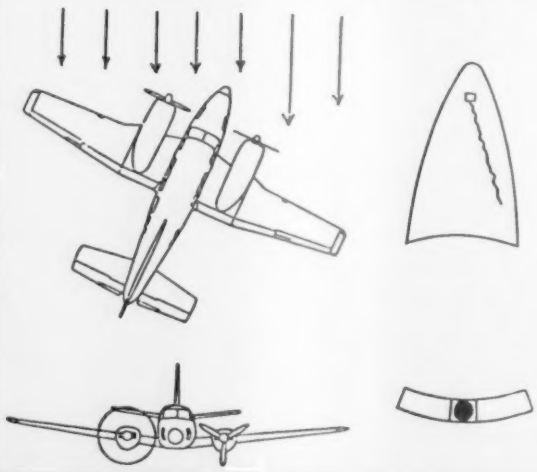
Many multiengine pilots are under the impression that in "coordinated" flight, the airplane flies straight through the air, without slipping or skidding. That may be true in a single-engine airplane or a twin with equal power on both sides. But when one engine quits, and the power is off-center, the rules suddenly change.

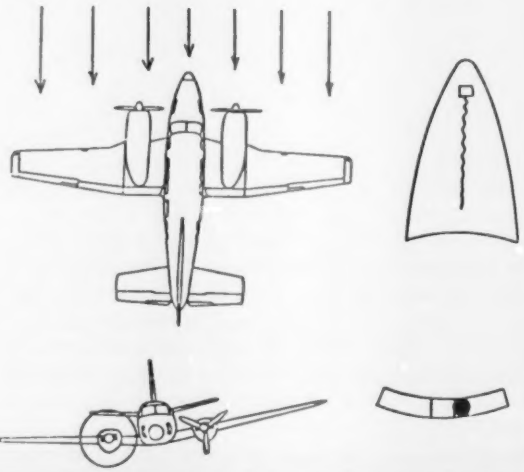
In fact, in wings-level "coordinated" flight – with the ball precisely centered – an engine-out twin is flying at a rather large sideslip (below, left). A piece of string taped to the nose or windshield would lean toward the good engine. Single-engine rate of climb degrades drastically or disappears altogether, while V_{mc} can increase as much as 15 or 20 knots.

Naturally, when the manufacturers do their performance testing to write the numbers in the owner's manual, they use precise sideslip-indicating instruments to assure zero sideslip and therefore maximum performance. Unfortunately, these instruments are not available to the average pilot, and he has no way of knowing his sideslip angle. (*Most* **mistakenly** *assume zero sideslip occurs with wings level and ball centered, as it does in normal flight.*)

In most twins, zero sideslip occurs when the aircraft is banked approximately 3 degrees into the good engine (below, right). The ball will be well off-center (toward the good engine) – a fact that may disturb many pilots – *but a yawstring will show that the airflow is straight along the nose, the proper flow for minimum drag and maximum performance.*

We urge multiengine pilots to tape a piece of string or yarn to the nose of their aircraft and go out and try some single-engine flight. You may be surprised. Frankly, we believe that a piece of red yarn and duct tape should be mandatory equipment on any twin-engine airplane. But we wonder if it would have to be TSOed . . . (Technical Standard Order).





or Type Rating" flight test guide (AC 61-4C). In it no mention is made of banking into the good engine during the V_{mc} demonstration. Presently, flight instructors and flight examiners are teaching students to maintain heading *with the ball centered in the turn-and-slip indicator.* The Navy's twin-engine training squadrons are also teaching the balanced ball (ball in the center) technique for maintaining single-engine flight following engine failure.

It is important to recognize that, with the wings in any position less than a 5-degree bank angle, the minimum control speed is substantially higher than the value shown in the flight manual. On most of our modern multiengine airplanes, the difference in V_{mc} between the 5-degree bank condition and wings-level condition may be as high as 20 to 25 knots.

The reasons for this large increase in minimum control speed with varying bank angle are fairly complex. Essentially, the effect of the bank is to reduce the amount of rudder power required to overcome the asymmetric thrust condition. As the wings are brought to a level position, more rudder is necessary. For a given rudder deflection or rudder pedal force, therefore, a higher speed is required.

This characteristic applies to all multiengine airplanes. It is accentuated in the latest designs because of the large amount of power or thrust available for takeoff and the fact that the thrust lines of the engines are located further out on the wing span. This increases the turning moment caused by the unbalanced thrust condition.

The point of all this discussion is that in order to achieve the best performance in case of an engine failure during takeoff, climb, or any other flight condition when high power is required, the airplane should be kept in a 5-degree banked attitude with the inoperative powerplant on the high side. The normal takeoff procedure assures that airspeed will be above the minimum control speed (air) with the most "critical" engine inoperative. This is only true, however, if the 5-degree bank angle is maintained.

The problem of control with one engine out is not always understood, even by many multiengine pilots. When an engine quits, many pilots instinctively try to center the ball. This fact belies knowledge of how an airplane functions with asymmetric thrust.

Aircraft drag normally acts around a point along the centerline of the fuselage. When the prop is windmilling or feathered, the center of drag moves toward the dead engine. The good engine exerts its pull along a line several feet to the side of the center of drag. This causes the aircraft to rotate toward the dead engine.

The pilot has two choices at hand to prevent the rotation. First, he can chop the power on the good engine and quickly regain control of the aircraft, as it would then be in a symmetrical power-off glide. This is certainly not a desirable option just after takeoff or at low altitude, unless the aircraft is about to go out of control.

The second alternative is to use as much power from the good engine as possible, in order to maintain a safe single-engine flying speed. This requires stopping the rotational movement with rudder, which then causes the airplane to skid toward the dead engine. To compensate for this, it is necessary either to bank into the good engine or to yaw toward it.

A variety of rudder and aileron combinations can be used to maintain heading. Most pilots try to center the ball in a wings-level attitude with the aileron on the good engine side being raised. This compensates for the additional lift produced by the propeller slipstream passing over that wing. However, if viewed from outside the aircraft, the fuselage would not be aligned with the direction of flight, but would in fact be yawed toward the good engine.

The following paragraph is quoted from the article "Half-Hearted Twin" by Peter Garrison which appeared in the November 1980 *Flying* magazine:

> "An increasing number of twin-engine aircraft are fitted with counterrotating engines, instead of engines that both turn clockwise from the pilot's perspective. The reason for this is to eliminate the 'critical engine' phenomenon, which results from one engine's downgoing blade being farther from the fuselage than the other's on a conventional twin. Because of the aircraft's positive angle-of-attack, the downgoing blade will have a greater angle-of-attack than the upgoing blade; this partly explains why airplanes pull to the left on takeoff. In effect, the center of thrust of the prop disc is shifted to one side by tilting the thrust line upward. The greatest demand upon the rudder in an engine-out situation is made when the good engine is the one whose downgoing blade is farther from the fuselage – that is, the right engine. Therefore the left engine is the 'critical' engine – the one whose loss presents the greatest problem of controllability. With counter-rotating props, there is no critical engine." Continued

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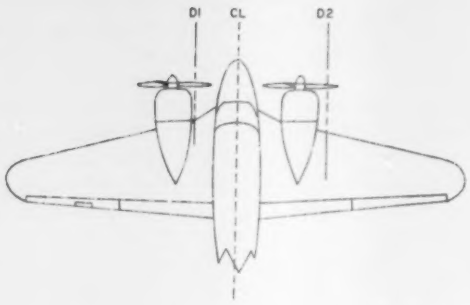


The forward pull of D_1 (descending blade of No. 1 engine) is the same as D_2 (descending blade on No. 2 engine), however, the center of pull of D_1 is much closer (to the centerline of the aircraft) than D_2, therefore, the turning moment of D_2 is much greater than the turning moment of D_1.

The blades of a propeller are miniature airfoils and are therefore dependent on the angle-of-attack for their lift. In the aircraft with a positive angle-of-attack, the descending blade (blade on right side of aircraft) has a greater angle-of-attack than the ascending blade (blade on left side of aircraft). This extra pull, or thrust, by the blade which is on the right side of the aircraft tends to pull that side ahead of the left side and thereby causes the airplane to turn to the left. Conversely, a negative angle-of-attack (dive) produces a greater thrust on the ascending blade, thereby causing the airplane to turn to the right.

– Multi-Engine Rating Study Guide
by Marvin Ellsworth

The 5-degree wing down into the good engine is not a new concept and is referenced in old Flight Manuals (World War II type) as well as those of modern military aircraft (see Figs. 1 – 6 at end of article). What isn't referenced or discussed at all in any of the manuals is the fact that **single-engine flight with the ball in the center can have a very detrimental effect upon V_{mc} under certain conditions.** Reference to the position of the ball is conspicuously absent in Navy NATOPS Manuals. Since the Navy's student aviators undergoing multiengine training are being taught the "ball-in-the-center" technique for single-engine procedure, it is obvious that the Navy has given little credence to the "ball-out-of-the-center" technique. According to Grumman's veteran test pilot, Dave Seeman, the single-engine procedure with the ball out of the center is just as applicable to heavy twin-engine aircraft, such as the E-2 and C-2, as it is to the light twins. To a lesser degree, it also applies to four-engine aircraft such as the C-130 and P-3.

While *APPROACH* magazine and the Naval Safety Center are in no position to determine what should or should not be taught, we believe that what is presented here needs to be known. The concept is thought-provoking since it obviously is a drastic departure from long-established techniques and procedures taught in the Navy's multiengine community. ◄

1 **Grumman Mallard (World War II Amphibian)**

Under Single-Engine Operation: lower the live engine wing approximately 5 degrees and maintain a straight flightpath with rudder. (No mention is made as to position of the ball.)

2 **F-7F Flight Manual (World War II Grumman Twin-Engine Night Fighter)**

Engine Failure During Takeoff

(1) Nose down to pick up flying speed (120 knots is minimum for control with one engine).
(2) Rudder into running engine.
(3) Drop wing as fast as possible on side toward running engine. (No mention is made as to position of the ball.)

3 **U-11A Flight Manual (Piper Aztec)**

Best single-engine performance will be obtained with the dead engine wing held up about 3 degrees higher than level to help counteract the tendency to turn in that direction. (No reference is made anywhere as to what should be the position of the ball.)

4 **UC-12B NATOPS Flight Manual**

V_{mc} Minimum Control Speed – 86 KIAS in the following configuration:

- *Gear up*
- *Flaps up*
- *Propeller windmilling (dead engine)*
- *Live engine – takeoff power*
- *Five-degree bank angle into live engine*

Under "Engine Failure" heading it states, ". . . The rate of roll and yaw varies directly with the rate of power increase on the operative engine. These can be easily controlled with aileron and rudder. Rudder trim is sufficient to maintain balanced flight at airspeeds above approximately 100 KIAS. At speeds below 100 KIAS, full rudder trim must be supplemented by constant rudder pressure. At full rudder trim, only a few inches of rudder travel remain . . ." (No mention is made of flying in unbalanced flight.)

5 **T-44A NATOPS Flight Manual**

V_{mc} Minimum Control Speed – 86 KIAS. (The configuration is exactly the same as listed above for the UC-12B.)
Under "Engine Failure" heading the wording is exactly the same as for the UC-12B.

6 **E-2C NATOPS Flight Manual**

PART 2 – TAKEOFF EMERGENCIES
ENGINE FAILURE, UNSOLICITED AUTOFEATHER, PROPELLER MALFUNCTION DURING TAKEOFF

". . . After liftoff, accelerate to single-engine climbout speed, maintaining 5-degree wing down into the operating engine to reduce sideslip and required rudder pressure, and complete the takeoff-continued checklist memory items."
(No mention is made of flying in unbalanced flight.)

complacency k*i*l*l*s

By LT D. J. Phillips
VP-11

HAVING had the opportunity to pilot both the F-14 and P-3, one significant difference was noted – there appears to be more opportunity for a VP aviator to fall into the trap of developing a complacent attitude. Especially vulnerable are the newer pilots.

For the jet types, the Training Command usually cures any trends towards complacency. Spinning a T-2 off the perch in the gun pattern or departing a TA-4 during a solo ACM hop enlightens the student aviator to the fact that things can go wrong quickly. He begins to develop an attitude of "Yes, it can happen to me, but I am going to do everything possible not to let it." He takes nothing for granted. Any hard core types are usually converted once they see the back end of the USS LEXINGTON. This attitude normally prevails for the jet pilot throughout his entire career, reinforced by his own close calls, operating off the carrier, and accidents within his squadron or air wing. Granted, complacency is present at all levels to some degree, but those in jet aviation who have this attitude usually are not around too long.

The patrol community has had the luxury of operating for years with minimum accidents. Herein could be the crux of the problem. Flying an aircraft with four very dependable engines on routine 10-hour missions can make even the most diligent aviator a little complacent. But it must not be that way if VP is to continue to enjoy its excellent safety record. The *nugget* joining his first VP squadron most likely has not had the rude awakenings that a jet student encounters during the Training Command program. He has flown the T-44, which boasts both a phenomenal readiness rate and safety record. The new guy does not realize yet that it can indeed happen to him. He could be developing a trend towards complacency. Even though he is not aware of it, he has laid a good foundation for future problems.

This attitude is not solely the problem of the *nugget.* Many well seasoned and experienced aviators fall into it occasionally. It is sometimes easy to rationalize that this is just another mission – "I'll let my second pilot get the preflight because it's too cold out and I'm too busy right now." If you don't care, then neither will the new guys who look to you for the necessary guidance and professional attitude. You could be on the road to disaster entirely due to complacency. The complacency problem will always exist unless positive action is taken by both you and your squadron. Do it!

B

BRAVO

LCDR Warren E. Spratt, Jr.

This Navy recruiter launched in his T-34B from Raleigh-Durham Airport on what was scheduled to be a local area NATOPS proficiency hop. He self-imposed several PMFC (postmaintenance functional checkflight) restrictions on the flight because maintenance had removed remnants of a bird's nest from the engine compartment. All aspects of the preflight, including fuel samples, were normal. The weather was nearly CAVU.

Takeoff, climbout, and the first touch-and-go were without incident. Shortly thereafter, however, the *Mentor* began to act up. The tower advised the pilot to fly his next pattern tighter because of conflicting traffic. As he climbed crosswind through 600 feet AGL, LCDR Spratt noticed that the aircraft was running rough and losing power to 15-17 inches M.P. An associated smell of raw fuel in the cockpit gave him a strong suspicion of a possible fire.

The alert pilot promptly secured the engine as prescribed by NATOPS and set himself up for a dead stick landing. Prior to securing the battery, he managed to broadcast a Mayday and inform the tower of his intentions. When he was unable to get set up for the main runway because of his altitude, LCDR Spratt turned 45 degrees port to an off-duty runway.

As the *Mentor* approached the field boundary, a row of trees appeared as an obstacle to his glide path. At 85 knots, LCDR Spratt alertly turned on the battery and dropped the flaps, which allowed the T-34 to balloon over the trees and touch down safely on the prepared overrun just short of the runway. The powerless aircraft came to rest 800 feet down the runway.

The engine problem had been caused by failure of the engine-driven fuel pump. The aircraft sustained no damage.

LCDR Spratt's handling of multiple emergencies with very little time and few options available was a demonstration of aviation professionalism at its finest.

CDR Rod Bankson and LCDR Skip Hughes

ON 21 June, onboard USS SARATOGA with Carrier Air Wing THREE, CDR Rod Bankson, CO of VA-75, and his B/N, LCDR Skip Hughes, Operations Officer of the "Sunday Punchers," briefed for a night tanker mission which proved to be anything but routine.

Launching into a 5,000-foot pattern to "hawk" the following recovery, the crew acclimated themselves to a dark night with variable cloud layers to 20,000 feet. All was going well, the F-4s made it aboard, recovery was complete, and CDR Bankson added power to climb.

Then it happened! All the cockpit instrument lights went out, but the VDI (Vertical Display Indicator) was still lit. The RAT was deployed but had no effect. A flashlight was quickly turned on. It was discovered that airspeed, altitude, and VSI were all in disagreement with the VDI nose-up attitude. The instrument floodlights were working, the peanut gyro had an OFF flag, the horizontal situation indicator was spinning, the TACAN was bad, and the aircraft trim was not functioning. It was not immediately clear whether the tiny needle ball on the bottom of the secondary gyro was operating properly.

Fortunately the radios, though weak and garbled, continued to work. *Unfortunately* the divert field weather was 1¾ miles visibility in fog. Visibility at the carrier was 4-6 miles, even though it was pitch black with no horizon.

An A-7 joined in trail and confirmed the KA-6D's attitude. Rather than risk vertigo with a dissimilar aircraft approach, transition, etc., the crew elected to fly a real partial panel approach. The ASN-41 "needles" were inoperative. However, AC2 Dorsey, SARATOGA's most experienced air controller, ably assisted CDR Bankson and LCDR Hughes through a no-gyro approach to a "normal" night landing.

Postmaintenance analysis revealed that the phase C essential 115-VAC circuit breaker had popped and another short had prevented the RAT from restoring the full essential bus which contains all the necessary flight instruments. Further analysis showed that in the KA-6D tanker, *both* attitude reference systems are on the same essential bus. This design deficiency is being corrected.

Because of the crew coordination and superb airmanship demonstrated by CDR Bankson and LCDR Hughes, a KA-6D tanker and crew were saved to fly another day.

CDR Roger P. Flower

AS CDR Roger P. Flower rolled his A-7E to 120-degrees angle-of-bank to investigate his first contact on a SSSC (Surface Sub-Surface Contact) mission, he experienced severe yawing of the aircraft. He then disconnected the AFCS with the paddle switch. Immediately, the stick became extremely difficult to move. He had no roll response. As the A-7 continued rolling to the inverted position, CDR Flower turned off the yaw stabilization, but he failed to notice any improvement. When the A-7 neared completion of a 360-degree roll, he reselected the yaw stab and turned the control augmentation back on. At this time he regained full roll control.

He then climbed to 15,000 feet over the carrier and did some troubleshooting. He duplicated the loss of control response by cycling the control augmentation, then slow-flighted the aircraft in a dirty configuration with normal roll response. He was then able to make a straight-in approach to a successful carrier landing.

His malfunction occurred because of the failure of the roll feel isolation actuator rod end. This failure precluded his having any aileron control unless the control augmentation was engaged. Later investigation showed that the rod end had been overtorqued in the direction of removal (counterclockwise), bent, and 90 percent sheared.

NATOPS procedures for an AFCS malfunction include disconnecting some or all modes and leaving them off. In this instance, CDR Flower followed the correct procedures but discovered, in *extremis,* that another more serious malfunction was evident. In order to regain control of the aircraft, he employed a second procedure diametrically opposed to the one he had just used.

The recovery of the aircraft and analysis of the failure may provide some insight into previous A-7E accidents where loss of roll control was a factor.

The cool, quick thinking of CDR Flower prevented the loss of a valuable asset. If the failure had occurred on a catapult shot or late in the carrier approach, it would undoubtedly have resulted in an aircraft accident labeled "undetermined loss of control." ◄

When you can't eject

YOU

By LCDR Rick Clarke
VR-48

FOR tactical jet aviators, ejection seats may be efficient, but using them entails some risk. It's one of those cases where the risks aren't too bad when you consider the alternatives, however. So much for TACAIR.

For transport aviation, or fleet support, things are a little different. On those rare days when there are too many little red lights in the cockpit to suit the occasion, there is no alternative to some sort of arrival on the ground followed by a hasty evacuation from the aircraft – **on foot.** The success of this process depends entirely on self-help and a prepared flightcrew, so it pays to think through the problems. Even though you don't crew a C-9, C-131, C-118, or C-130, if you read this magazine, you stand a good chance of being a passenger on one.

The following description of the difficulties associated with transport aircraft evacuations is concentrated in three areas: the environment, the equipment, and the problems. The discussion is based primarily on experience gained in civil aircraft operations since these are similar to Navy transport operations and have been subjected to a good deal of study. Equipment descriptions and discussions are general in nature and are only intended to provoke thought on the part of squadron personnel who know their own equipment in detail.

The Environment. The most important thing for a transport aircrew to realize is that accidents and incidents are almost always a surprise. It is very rare that there is enough warning to prepare yourself or your passengers for the impact, so your own (and your passengers') initial reactions are likely to be slowed momentarily while your minds catch up with the events. At this point, if your emergency training has been frequent and thorough, you will assume your role as leader and director of the evacuation. If the accident is not catastrophic, the pilots will be able to assess the situation and direct appropriate action. In serious accidents, cabin crews may be on their own. Either way, the passengers will depend on the crew.

Typically, a transport accident will be somewhere near the airfield. In fact, about 90 percent of transport accidents occur within 3,000 feet of the active runway during takeoff, approach, or landing, and 80 percent are on the runway or in the overruns. If you are on or near the runway, help is going to be on the way (even civil airfields have crash trucks at the field these days). If you are away from the runway area, you've got problems. Crash crew response becomes very difficult outside prepared overrun areas due to ditches, fences, ravines, trees, and all manner of natural or manmade obstacles. The crash crew will try hard, but essentially you're on your own.

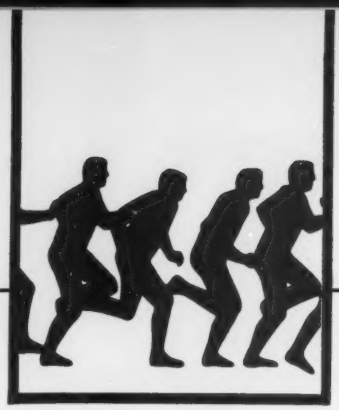
Fire is the major hazard. Under some circumstances, fire may not occur, but you should certainly expect it. Because of this, speed becomes critical. New aircraft like the C-9 have been demonstrated to allow a full load of passengers to exit in 90 seconds with half the exits blocked. That sort of evacuation rate is not possible in older types such as the C-118 – the exits, slides, and airframe weren't designed to the same standards as the C-9.

Water is also a hazard. If you consider how many military and civilian airfields are located near bodies of water, you will realize that your crew and passengers stand an excellent chance of getting wet. Sure, there won't be a fire, but you'll be faced with a survival situation every bit as hairy as an open ocean ditching. And you won't have the advantage of preparation for all these carefully laid out ditching bill duties.

The Equipment. If you think about it for a minute or two, you'll figure out that there's not too much in the way of equipment for a transport evacuation:

- Slides – On the C-9, there are inflatable evacuation slides, while the old piston poppers have a plain fabric chute which is hand-held. C-130s and T-39s ride low enough for you to step out.
- Lighting – The C-9s, some C-131s and other aircraft that are also civil transports have impact-actuated emergency lights installed in the ceiling areas of the cabin, and the C-9 has lights over emergency exits. The older birds have wall-mounted battle lanterns which are aimed at exits, but these are not automatically turned on. So much for lights.
- Water Survival Equipment – Older aircraft such as the C-118 will have lifevests in the seat pockets within

RUN!



easy reach of passengers; the C-9 has lifevests under the seats. In the other aircraft, they're "aboard" in various locations; rafts are suspended overhead, lashed to the cabin floor, boxed in neat overhead compartments, and generally put wherever there's enough space for a big, bulky, heavy article. Supplementary survival kits may be tucked in the raft or located in other stowage areas.

- Parachutes – Besides their use over the VIP pavilion at the Navy Relief Carnival, they are carried on post-maintenance checkflights for the crew's use. On passenger flights, parachutes are not part of the aircraft's survival equipment.

That's about it for equipment!

The Problems. By now you've thought over where the equipment is in your airplane and remembered all those "ditching drills," evacuation briefing cards, and where your exits are. Good! What you've just recalled is all you'll have to go on when things get hairy. Satisfied? I hope not!

Here's how it's really likely to be:

Location – In the runway overrun, mixed in among all those very sturdy approach light pilings.

Weather – Dark, wet, and windy.

Aircraft Condition – Broken. The cockpit will be heavily damaged, with cockpit crewmembers pinned in the wreckage. The cabin will be in three sections with the two breaks fore and aft of the wings. The galley and coat closets will have detached and fallen across the aisles, blocked one or more exits, and injured some crewmembers and passengers. The contents of overhead bins and racks, as well as all the underseat baggage, will be strewn around the cabin and in the aisles. Several rows of seats will have detached and piled into the seating area forward of their location. Many overhead rack units will be hanging at seat level. Automatic emergency lighting will be on. Wing fuel tanks will be torn open.

Injuries – Many passengers and crewmembers will be cut and bruised by flying debris and from being thrown into the seats or bulkheads around them. Back injuries from bending at the waist upon impact will be common. Leg injuries from hitting seat bottoms also will be common. Most occupants will be in the early stages of shock.

External Factors – A large fuel fire will be raging in the wing root area on one side of the plane.

Evacuation – Those crewmembers who are still mobile will see the fire and try to open exits on the non-fire side. One or more exits will be blocked and inoperable. The passengers will first head toward the normal entrance doorway, but crewmembers shouting "This way!" will redirect them to nearer exits and away from inoperable exits. Some time during the confusion, a passenger will open an exit on the fire side. Thick black smoke will fill the cabin, and the lights will appear to go out as the top of the cabin is filled with the toxic smoke. Survivors will grope their way to cabin openings, including breaks in the fuselage.

Since the crash crew was standing by near the runway, they will probably reach the airplane in 3 minutes, but soft ground and ditches will have slowed their arrival. They will be on the scene in time to reduce the intensity of the fire during the evacuation, but the evacuation will be finished before the fire is out.

The evacuation will be complete, for mobile survivors, in 3 to 5 minutes. Mobile crewmembers will provide aid and leadership until medical personnel arrive 5-10 minutes later. There will be far more injured survivors than the base medical facility normally handles at one time.

Summary. The important factors in the scenario above are: the massive damage to the cabin, the disabling of a portion of the crew, the blocked exits and aisles, the loss of lighting, the fire, and the field obstructions which slowed the crash trucks. If you'd rather not think about fires, then think of an unplanned water landing with passengers trying to fish lifevests out of the rising water and crewmembers blocked from getting to the rafts. Cold water is just as lethal as fire.

If there's a moral to this story, it is simply to plan your training around a realistic assessment of the accident situation.

(See accompanying article, "Bargain Basement Evacuation Training." – Ed.)

Bargain basement evacuation training

By LCDR Rick Clarke
VR-48

Overwing exit access and operation is explained to squadron personnel.

Packing-material obstacles were placed in the galley area to simulate cabin obstructions; trainees have donned treated goggles which simulate obscured vision.

Trainees bend low and head for the aft exit.

WHEN VR-48 acquired new aircraft, the VC-131H, the command needed to acquaint itself with the evacuation aspects of a wholly different airframe and cabin. With this thought in mind, a special effort was made to produce a realistic drill during a periodic safety standdown.

Based on information available from accident investigations, the squadron decided to focus on these special evacuation circumstances:

- Cabin damage
- Blocked exits and aisles
- Loss of vision due to smoke and darkness

To provide a simulation of these factors, the evacuation lecture was carried out for groups of 10 people seated in the aircraft cabin. During the lecture, the likely areas of damage were pointed out and all the difficulties were discussed. Then came the surprise!

As cabin damage was discussed, large bags of soft packing materials were tossed into the aisle by lecture assistants. Instantly, the aisle was no longer an easy means of egress. Then, as vision obscuration was discussed, the assistants handed out safety goggles which had been specially treated to cloud the goggles. The trainees reluctantly wore the goggles during the remainder of the lecture.

The intent was to unsettle the trainees, and it appeared to have the desired effect. No one enjoys losing his vision and knowing that his egress must be accomplished over obstacles.

To complete the drill, the trainees were required to duck-walk or crawl down the aisle to the aft exit. This stressed the need to stay underneath the smoke and toxic combustion gases that would be likely to fill the upper level of the cabin. Speed was absolutely discouraged in favor of allowing the trainees to learn the difficulties of overcoming the cabin obstacles without their vision to aid them. At the cabin doorway, goggles were removed and the trainees exited by means of the evacuation slide.

The drill was given high marks by all the trainees for its simulation of an evacuation situation. The trainees were surprised at how slowly they got out of the cabin due to the relatively minor artificial obstacles and clouded vision. Realism was achieved by use of the goggles which had been sprayed with an opaquing aerosol agent and by the cooperation of the local supply officer who loaned the packing materials used to stuff the plastic bags and make obstacles. It was cheap, easy, and effective. ◄

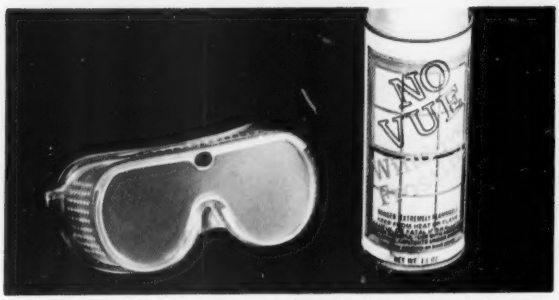
The VC-131H Evacuation chute is deployed from the aft exit.

Crewmembers descend by rope to complete deployment of the chute.

With assistance from trainee "passengers," the chute is held in the receiving position.

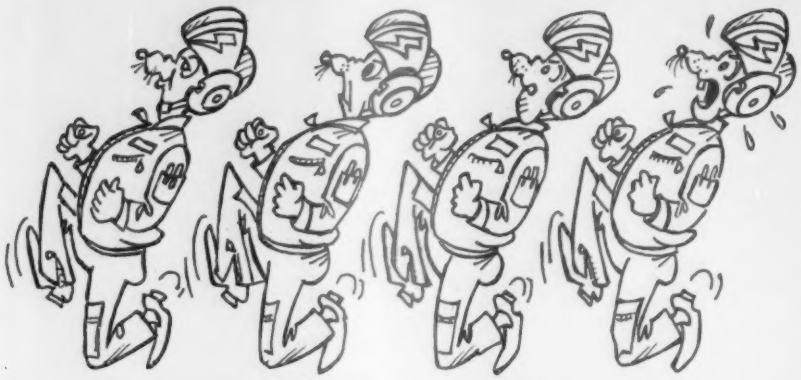
Proper use of the chute means keeping hands clear of the sides to avoid friction burns.

A trainee descends the chute. It is necessary to have hands and feet clear of the fabric to avoid injury and assure that the trainee slides down the chute.



Application of an aerosol window frosting to standard safety goggles produces an effective training aid for simulating loss of vision. (The treatment is permanent.)

Anymouse



"Next time I fly with this guy I'm bringing my track shoes!"

Safety First or Sortie First?

AN EA-6B was ready and in a "go" status spotted halfway up the No. 1 catapult track. While performing the before-takeoff checklist, ECMO-1 (right front seat) found that he had ICS problems and couldn't communicate with the rest of the crew. Trouble-shooters discovered a screw missing in his ICS foot switch. Since no one knew of its whereabouts, the pilot downed the plane until a cockpit FOD inspection could be conducted. He then decided to man-up another *Prowler* parked just forward of the island. So, with 5 minutes to go before launch, the crew "hot-footed" it into the second EA-6B. (Gotta keep up that sortie rate, you know!)

Can you imagine what kind of a walkaround was done? Supposedly it was an "up" bird. Sure hope no last-minute information was missed while the crew was sprinting down the flight deck. I wonder if the correct electronics pod load was on this *Prowler?* Minor details – just man-up, strap in, and get the aircraft moving. The yellow shirts were in a frenzy to get the *Prowler* on the catapult. ECMO-1 zipped through the checklist. (All you need is wings locked, flaps/slats, stab shifted, and trim set, right?) In the man-up flail, one crewman just barely got his shoulder straps cinched before being catapulted.

Fortunately, everything went OK. The mission was flown normally and terminated by a safe recovery. The stage was set for any number of "little" things to go wrong, however, including missed checklist items, discrepancies not seen because of no walkaround, etc.

The party line, often uttered, is that "No peacetime training mission is so important that safety has to be 'back-burnered.' No sortie is so important that a crew has to rush from one aircraft to another without the proper knowledge and a thorough preflight of the plane to be flown."

This Anymouse isn't convinced that the party line matches operations as they really are!

I.O. Mouse

Radios in SAR Aircraft

THE ARC 116 UHF is unsafe for use in any single-piloted aircraft and additionally is a hindrance to the SAR effort. The ARC 159 is readily available throughout the Navy except for the outmoded UH-1N aircraft assigned to SAR units. There is another problem with communications equipment in that VHF should be made available to SAR units – particularly those operating at joint-use airfields.

Both of these minor improvements are available in the system. However, the Navy and Marines continue to use the outdated "stab bar" *Hueys* for SAR in locations where the bureau numbers are not accepted in the supply system for updated equipment. The aircraft are already wired for this equipment. If there is a shortage of this equipment, our priorities should be investigated. There are probably enough modern UH-1Ns in storage/non-aging status throughout the fleet, and the fleet could probably survive

"What d'ya got in an ARC 159?"

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. These reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

easier with the ARC 116 (manual dial) UHF in their operating environment than in a SAR bird.

Puzzledmouse

Of the 182 UH-1Ns, the 83 early-production bureau numbers are equipped with the ARC-116, while all others have the ARC-159. The ARC-159 is desirable because of its compatibility with COMSEC equipment and safer, easier operation. ARC-159s for retrofit have been requested by PMA-255D every year but have yet to receive funding. The ARC-182, which would provide both UHF and VHF communications, is still about 5 years away. No interim measures are anticipated.

"You got it all wrong, Mama, I don't use *your* lox in any old airplane . . ."

Safety – Only Lip Service?

THERE has been recent, high-level attention concerning the use of oxygen in tactical aircraft. CNO's policy statement from OPNAVINST 3710.7 reads:

> TACTICAL JET AND TACTICAL JET TRAINING AIRCRAFT. Oxygen shall be used routinely by all pilots from takeoff to landing.

The following story may offer some insight as to how things really are out in the fleet:

USS BOAT was conducting routine, cyclic flight operations in WESTPAC with NAS Suitable Divert 62 miles away. The weather in the operating area and ashore was CAVU.

Tanker availability this night was poor; aging KA-6Ds were going down on turnup and the buddy stores on D-704-configured A-7s were unreliable. The one "up" and airborne KA-6D trapped aboard requiring LOX servicing and was properly downed by the aircrew. However, CAG and his chain-of-command directed a hot-refuel/crew switch and placed the aircraft in Alert-5 status for the last recovery. (Note: The KA-6D must be shut down for LOX servicing. Shutting down the engines in this case would have permitted LOX servicing, but then the aircraft would have required a daily, turnaround inspection, and precious time.)

As it turned out, the Alert-5 tanker was not launched and all was forgotten. But no...the fact that a "down" aircraft was placed in an "up" status and the aircrew was directed to fly without oxygen in a situation other than operational necessity was not forgotten.

MORAL: Dual messages from powers-that-be invite confusion amongst subordinates; i.e., always use oxygen from takeoff to landing...sometimes.

Alertmouse

"The Super-Glued Huey"

A Search and Rescue UH-1N (*Huey*) was going through a phase inspection. The engine chip detectors had been removed in accordance with the phase MRCs. The No. 1 engine chip detector adapter (it holds the chip detector in the engine) was found to be broken. In accordance with good maintenance procedures, a MAF was filled out and a replacement adapter was ordered.

As so often is the case, however, *red tape* unwinds very slowly, and in the case of a *Huey* adapter, even more so. When the maintenance chief found that obtaining the needed part wasn't quite as easy as picking up a part at Sears, he started to come "unglued." His solution – super-glue the old part and reinstall it! Since it wasn't a case of all chiefs and no indians, the indians did as they were told.

Not too surprisingly, upon installation the adapter broke in the same place. The chief was equal to the occasion. "Leave it on, it'll work," he said, and again the indians did as they were told. However, because they were good indians and they knew better, they went to the QA chief and told him the story. "Sorry," says he, "I'm only an E-7 and can't help you." Besides, our QA apparently waves a magic wand, and a part which was once worn beyond limits magically becomes a 'born again' part – like new.

If this "Super-glued" *Huey* has a sudden parting with its No. 1 engine, I'll be sure to send a "Crashed-mouse" report.

Stickymouse

Excerpts from a nugget's diary

By LCDR Dave Erickson and LT Chris Grazel
VF-51

15 April: Finally finished up with the RAG, I mean "Fleet Replacement Squadron." With 425 total flight-hours and 16 brand new traps, I'm ready to set the fleet on fire! My new squadron is almost ready to go on deployment. I'll just have to show my stuff on cruise. I'm told only the best go directly overseas.

20 April: Found out I'll be flying wing on the XO. My reputation preceded me! They must want me to keep the *old fella* out of trouble. No problem though, there's no job too big for me to handle.

08 May: The air boss on this ship sure is a whimp! Told me to "keep it climbing" off the cat. The troops need to see *something* for their efforts. Besides he ought to know I'm not going to fly myself into the water.

23 June: The first part of cruise has gone great. I've really been building my reputation as a *sierra hotel* aviator. There's not a person on this ship who isn't impressed, and I know the guys have been talking a lot about me. No one flies closer formation, executes snappier

clearing turns, or flies a tighter landing pattern than I do. Every once in a while I've had comments for some perceived minor flaw in my performance, but only from those *old salts* jealous of my innate ability. There's no doubt amongst us *nuggets* who's the best.

31 July: Boy, can I fly the ball. No matter where I start, I can center the ball by touchdown. Those LSOs must be blind. Who needs them! I got a "no grade" for an almost *rails* pass. The ball just sagged a little bit in-close. The LSO gave me a couple of power calls that I really didn't need, but I gave him a little anyway. The only reason I got a *taxi one wire* was because the deck must have been pitching.

12 August: One of the PRs pulled me aside today and told me that on the 91-day inspection my survival radio was missing its battery. Those guys should check my gear more often. I wonder how long that battery has been gone.

18 September: Had a great rendezvous on the tanker today. Came screaming in with over 100 knots of closure, went to idle and boards, rolled into 90 degrees angle-of-bank (lost sight of the tanker for just a few seconds), and when I rolled out, there I was in a perfect parade position! Those guys in the tanker were just amazed.

03 October: This *blue water ops* flying isn't too bad. No rules or regulations like back in the states. You can fly wherever you want and do all sorts of crazy things. You never have to worry about Bingo fuel! Can't wait to get home and tell my buddies at the club how great the cruise was. ◄

Authors' Note: Unfortunately, LTJG Nugget didn't make it home from cruise. He failed to return to the ship from a routine day mission. The actual cause of his mishap will never be known, but the underlying atmosphere which allowed an aviator of average abilities and aggressive nature to mature without direction bares addressing.

Climate is the all-important factor which sets the attitude within a unit with respect to mishap prevention. Climate is set by the unit commander and fostered by peer group leaders. It can be positive or negative.

Effective communications that result in positive feedback are essential to a positive safety climate. Although direct orders are a fact of military life, failure to receive and maintain two-way communications can be fatal to a positive safety climate. These communications are both vertical, i.e., up and down the chain of command, and lateral, i.e., between peers. In order to be effective, communications also need to be both timely and pertinent.

Perception and accurate self-analysis are necessary in order for the individual to establish his performance level within the group and his relationship to the standard. Feedback provides the individual with data he can use in performing his own evaluation. Accurate self-analysis is complicated by many aspects of naval aviation life. The young aviator, praised for his aggressiveness, lives in a world where "above average" is the average, where an "OK" pass becomes the norm, and where flight grades of 3.07 or 3.10 (when 3.00 is average) are the standard.

How many times have you read mishap reports where commanding officers' comments state: "He was one of my finest aviators and top performers"? It isn't what is directed, instructed, or ordered that sets the standard, but that which is actively or passively condoned by the commanding officer and leaders within the unit. When communications are not effective, actions, attitudes, and perceptions (as displayed in the above diary) exist and mature without direction. Adverse trends go unchecked.

Mishap prevention requires both awareness and a positive climate. With either one missing, a viable safety program cannot exist. Awareness is straightforward, relatively easy to administer and evaluate, and deals mainly with dissemination of information. Climate is much more subtle, difficult to effectively assess, and requires active, positive participation of group leaders. Without this positive climate, mishaps seemingly occur mysteriously.

A TERRIBLE

IT'S been about 5 years, the shakes have stopped, and most of the guilty parties are in other occupations, so it's probably safe to tell the story of how many errors of judgment four experienced naval aviators can total up and still be lucky enough to walk away.

The Setting – NAS Southville

The Weather – Bad

The Training Aids – Two TA-4Js

The Players – Two experienced pilot flight instructors and two experienced pilots undergoing refresher training.

The Mission – Head west to greener pastures and clearer skies chasing the almighty "X" for fam, form, instrument, and tactical formation.

The Brief –

Ops Officer: You need to complete at least three 2-hour hops a day, including a night form hop, and have them back here in 3 days. Get them enough hours so they can bounce for the boat next week.

Maintenance Officer: That aircraft had some bad power applied to it at an AFB last weekend. We haven't been able to find anything wrong with it, but try to stay VFR the first couple of hops.

Skipper: Don't screw it up.

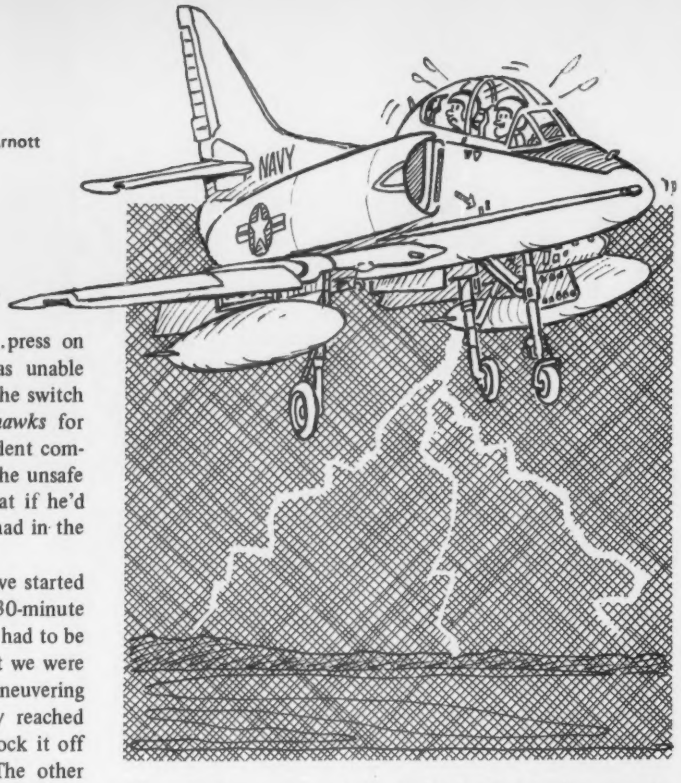
And so the odyssey was launched through a break in the overcast, between the thunderheads, to a standard rendezvous in a fair-sized sucker hole. As an "experienced" instructor, arms on the canopy rails, 02 mask at half-mast, and enjoying the scenery, I noted we were closing the lead a bit fast. "He can hack it. He's an experienced refresher pilot," were my final thoughts. A brief scan of the horizon with thoughts of nachos and pitchers of margaritas and... "Oh no!!" With a fist full of forward stick, a handful of idle and boards, and a hearty "I've got it!" we executed the time honored slashing attack underrun.

After regaining composure and returning control of the aircraft to the student, we pressed on to AFB Halfway. About 15 miles out, I again took the aircraft so we could execute our prebriefed section landing. Shortly after dirty-up, my fearless front-seat veteran piped up, "Hey Ace, this is really neat. I've never done a section landing before." My reply was, "That's OK, neither have I!" The landing went well in spite of the front-seat occupant's constant calls to watch lineup, altitude, etc.

On the section takeoff for the next leg, our nose gear indicated unsafe, but a visual check by the wingman indicated

TRIP

By LCDR Ralph E. Arnott
VA-27



the doors were flush. The obvious decision was...press on for the almighty "X." Transient maintenance was unable to fix the faulty microswitch but assured us that the switch was the only problem, so we manned our *Skyhawks* for our night formation/NATOPS check. When the student complained that the light in the gear handle indicating the unsafe nose gear was distracting him, I informed him that if he'd take out the bulb and put it in his pocket, like I had in the back, it would solve the problem.

The next day proved even more interesting, as we started the tactical formation hops. Our comprehensive 30-minute brief (which also counted as the ground school brief) had to be a little rushed to make our restricted area time, but we were six wheels in the well shortly. Starting with mild maneuvering and gradually increasing the gyrations, we quickly reached our front-seat pilots' upchuck level and had to knock it off occasionally for the necessary cockpit cleanup. The other refresher pilot was doing quite well in his yo' yo' maneuver, so I showed him my best last ditch maneuver. Out of the second reversal, the two droptanks of the other TA-4 passed close enough to our cockpit for us to count the missing fasteners on the hell hole door. That it was an excellent last ditch maneuver there was no doubt; whether or not it was prudent or instructional was open to some question.

The next day presented immediate problems since the available restricted areas were all booked up. Not to worry! A quick check of the chart showed a reasonably close area relatively free of airways. Quickly designating it the "Agony 69" area, we were off in section (with two sets of well-trained eyes on my nose gear) on a VFR flight plan.

As God takes care of idiots and drunks (we qualified on both accounts), we completed the hops and captured four more "Xs." It was time to head home. The two legs back would fill out the hours needed and we'd have the students in before midnight so they could start FCLP the next morning.

We made a short stop at Midwest AFB for gas. "You guys go on to the gedunk and order me a cheeseburger. I'll be right there after I get a quick weather brief." Twenty minutes later, they returned with a soggy burger, and I was still listening to this weather guesser who insisted on telling me about this wall of thunderstorms across our path. The buildups were in excess of 60,000 feet, with hail, rain, lightning, etc., but there was, or at least there might be, a narrow gap. Of course, we could hack it! He further delayed us by providing weather at several alternates, all of which were well short of where we were going to land. After finally appeasing this overconscientious second lieutenant, we were back in our aircraft when the ODO's truck, complete with flashing lights, arrived. It was that pesky weather guesser coming all the way out and delaying our launch just to tell us there were funnel clouds sighted in the wall of thunderstorms. "Thank you, but we're experienced naval aviators. We can hack it. Besides, it's time to get home."

"Let's get moving. I'll do all the checks and the takeoff and copy clearance taxiing out. Oops, I almost ran off the taxiway. They don't make 'em as wide as they used to, but could be I'm a little tired. Cleared for takeoff, 85 percent check, what's that, Dash Two? Fuel venting out of my droptank? There's a little fuel venting, but we've got to make the gap in the storm, so let's press. And give me a thumbs-up for that nose gear."

Well, so far so good, but that line of thunderstorms didn't look all that inviting. I really wasn't sure yet, but I thought my right drop might not be transferring. We kept climbing and looking for a bright spot in the frontal wall. We were in it solid then, but it wasn't too rough. The droptank wasn't transferring yet, but I cycled the switch and got out the book for any other ideas. It was getting rougher. Boy, was it dark! We couldn't climb any higher yet because we had to drop the RAT for a last ditch attempt to transfer that droptank. We did some quick figuring and decided we just might be able to make Homeplate without that 2,000 pounds. We checked weather at Shortstop AFB just in case. Continued

We finally found the thunder cell! The front-seat pilot couldn't maintain altitude within ± 1,000 feet! Dash Two was hanging on, but he looked scared.

"Center, Smoke 01 checking in Flight Level 290."

"Roger, Smoke 01. Do you have weather radar onboard?"

"Ahhhhhh, negative."

"Vector heading 100 to clear the worst of the storm."

Having taken control of the aircraft and completed the turn, I found that even I couldn't control the altitude within ± 1,000 feet! It was now becoming obvious there wasn't enough fuel to make Homeplate.

"Center, Smoke 01 requests destination change to Shortstop AFB."

"Understand; vector heading 100," was the controller's answer.

"Center, Smoke 01 declaring minimum fuel."

"Understand," said the controller.

"Wow! What a flash of lightning! What's that, Dash Two? My exterior lights are out? The switch is on, it looks like that A799 electrical problem wasn't A799 after all."

Meanwhile, the number two instructor, keying UHF instead of the ICS, stated in a loud and clear voice, "We're s-----d." The controller replied, "Understand."

Number two had lost sight of us, so now we were bouncing 1,000 feet either side of assigned altitude in the thunder and lightning. Shortly afterwards, the exceptionally sharp Center controller had us on separate vectors. On the descent to Shortstop AFB, we broke out a little below 4,000 feet over a big southern city, with lights from horizon to horizon and lightning bolts to match. Things were looking up! It was only a few minutes to the AFB. As I breathed a huge sigh of relief, my ICS crackled with, "Hey Ace, what's that low oil light?" My reply was, "Hey Jay, that's a low oil light!" "Hey Ace, why don't we declare an emergency?" "Hey Jay, that's a good idea!"

"Hello, Center, Smoke 01 declaring an emergency with possible pending engine failure!"

After a short discussion concerning duty runway, gear available, etc., we found ourselves abeam the runway at 2,000 feet. I had never shot a night VFR precautionary approach, but it was time to land. A short while later, we were, believe it or not, safely on deck with Number Two right behind.

Later, four shaken pilots with libations in hand were trying to piece together how four experienced aviators could make so many mistakes in such a short time and escape relatively unscathed.

The next day, the oil level checked satisfactory and the lights worked fine. External lights on the lead aircraft worked as advertised. We had a droptank failure due to a missing gasket on the cap because of an improper preflight. A short, uneventful flight finally returned us to Homeplate.

Nothing wrong could be found with either aircraft, with the exception of the bad microswitch on the nose gear door. A few weeks later, the same aircraft threw a turbine blade, however, with the engine seizing on touchdown after an emergency landing. The overall reaction of the operations officer, OINC, etc., was "Nice job, you got them qualified for the bounce!" Well and good, but I just wonder what they would have said if any one of a number of things had gone wrong and we had dinged an aircraft, or worse. The almighty "Xs" weren't really worth it. ◄

The only way to keep your health is to eat what you don't want, drink what you don't like, and do what you'd rather not.

Mark Twain

LTJG S. O. Lillie

The Making of Joe Aeronaut

By LTJG David R. Dillon
VAQ-133

THE making of Joe Aeronaut began back in the training command where, for months, he worked diligently to obtain those wings he so proudly wears on his chest. Joe recently completed RAG training and is now a jet pilot in a fleet squadron operating from the deck of an aircraft carrier. Is he ready to take his place in this most exacting of flight environments? Let's follow him through his training and find out.

During his student aviator days, Joe had no problems with either the flight or ground school phases of the program. He had a good head on his shoulders, which enabled him to breeze through NATOPS open- and closed-book exams and quizzes, emergency trainer sessions, and flight checkrides. There was, however, one common fallacy about this type of training that bothered Joe – he was always sitting in a **canned** environment. When he made a mistake, an instructor was on hand to set him straight. Not once was he faced with an *extremis* situation where a wrong move might be his last.

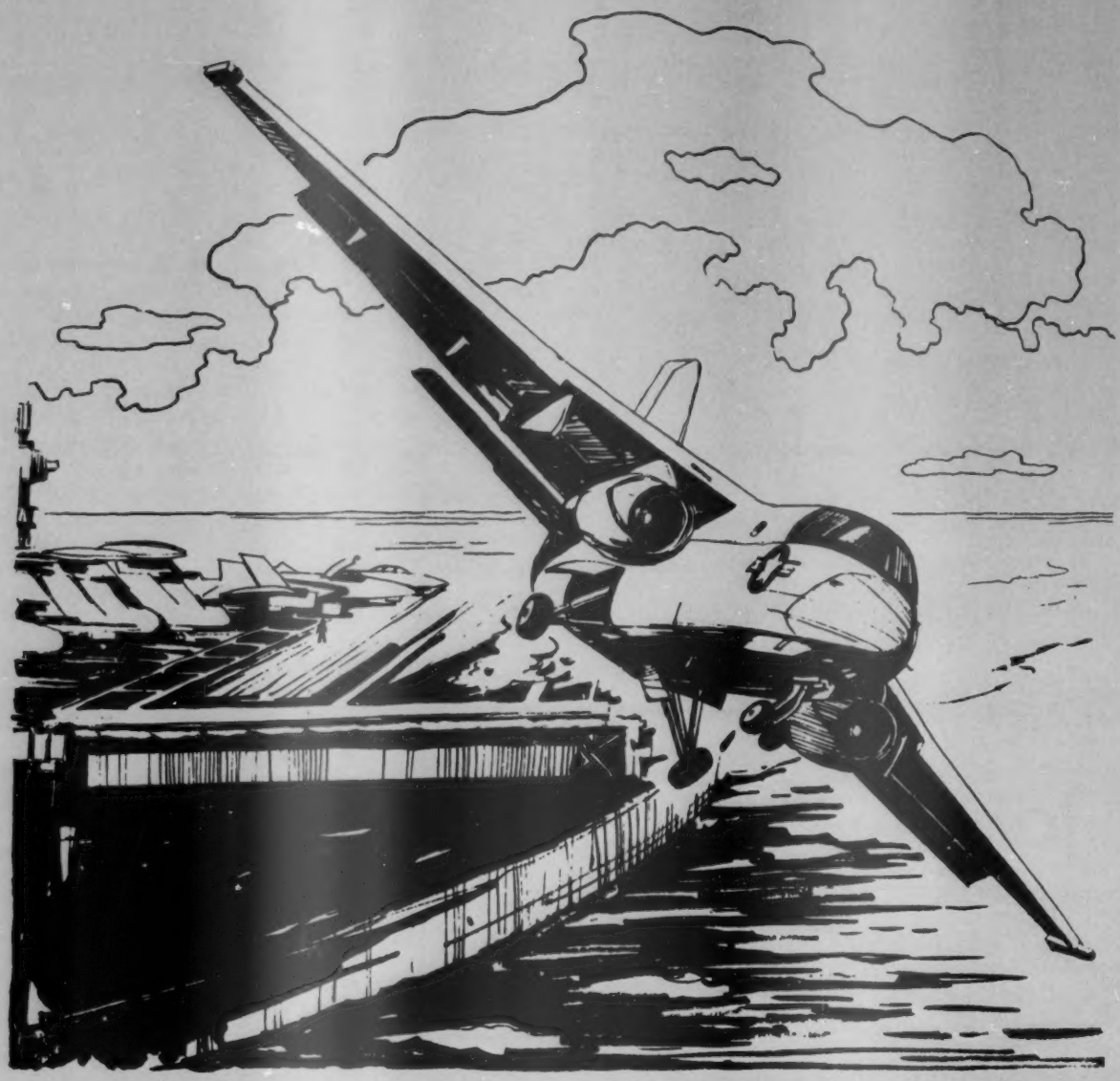
Joe understood the importance of the above training, but he wondered whether it alone would provide him with the ability to make a swift and proper decision when faced with an *extremis* emergency situation. He asked himself, "Will I really be qualified?" Joe pondered this question for a while and realized that on every flight there exists the possibility of his having to make a split-second decision that can determine whether he lives or dies. He may not have the time to spend on a logical, thought-out solution. If he and his aircraft are to survive, his reaction must be instinctively correct.

Thus, early in his training, Joe began to develop his flight instinct. All those NATOPS tests and checkrides played a vital part in establishing a base from which to work. The hundreds of "what if" questions thrown at him by his various instructors added to his knowledge base. But Joe knew that it was going to be up to him to fine-tune his flight instinct because there is no NATOPS manual or other pub which provides answers to every problem encountered in the air.

Joe Aeronaut brought his "what ifs" with him to the fleet. He uses them as a form of headwork game he plays with himself when his missions seem to become "routine." Sitting on the cat waiting to launch, Joe questions his own abilities – "What will I do if I don't have sufficient end-speed?" "How can I tell if it's not enough?" Throughout the flight, Joe asks himself questions, constantly reaffirming his own knowledge as well as his understanding of the aircraft. Without doubt, if Joe were in a multi-seat aircraft, he would insist that his crew be well coordinated and operating on the same wavelength.

By building his experience level through a never-ending training schedule, both formal and informal, Joe is continuously aware of his own abilities and of the aviation environment in which he operates. His instinct is becoming more refined, and he has reached the point where he is confident that he will react quickly and properly if an emergency situation arises.

Like all naval aviators, Joe Aeronaut will never know when an emergency will hit him or whether it will compound itself into an *extremis* situation. But, by being thoroughly prepared for it today, tomorrow, and the next day, he will be ready to respond with the right reaction. ◄



Sierra Hotel clearing turns

By LT Scott Johnston
VS-31

THE other day, as I was observing the midafternoon launch from the tower, I watched one of my compatriots, an S-3 pilot, make what I'm sure he considered a *Sierra Hotel* clearing turn off cat No. 4. Immediately after his gear left the deck, his left wing started down and he rolled to a 45-degree angle-of-bank. He applied G to pull the nose up slightly in the turn and started retracting the gear. After about 20 degrees of turn, he snapped the wings level and proceeded on his way at about 300 feet above the water. *Sierra Hotel!* Above average aggressiveness, airmanship, and control – a pilot to be emulated, right?

To me, this maneuver indicates a potentially dangerous

misunderstanding of both the concept of aggressiveness and of the violent forces acting upon an aircraft as it leaves the catapult. Let me talk about the latter first.

An aircraft leaving the deck has been supplied by the catapult with an amount of inertia and momentum – energy, if you will – in excess of that provided by the engines alone. (If this weren't the case, we could deck-run airplanes in the length of the cat stroke and wouldn't need catapults at all.) For the first few seconds off the catapult, the energy state of the airplane is seeking a balance between that provided by the cat stroke and that which continues to be provided by the engines. The airplane is, in effect, dissipating the energy provided by the cat in the form of lift. Until the engines catch up and begin to take over the burden of providing thrust, and ultimately lift, the airplane is flying on sheer momentum. Now, I ask you, is this a good time to introduce a large amount of drag into the equation?

No sane pilot would consider putting speedbrakes out off the cat, but in most of today's high-performance jets, roll augmentation is provided by anti-lift devices (spoilers) on top of the wings, which essentially have the same effect, aerodynamically. On the S-3, for example, the same piece of carbon composite material is used to provide roll control, speedbrakes, and direct lift control (DLC). Roll is controlled by decreasing lift on the wing you want to go down through the use of spoilers. This is great if you have a high energy state on the airplane and lots of excess airspeed to play with, but is that the case off the cat? No! For those first few seconds, you are actually **decelerating.** Why compound the problem by adding max-deflection ailerons and roll augmentation spoilers? We've all heard the sea stories about those F-4 jocks that put the gear handle up and the stick in their left hip pocket after saluting the catapult officer. But how many of those guys made it into the ranks of *old* rather than *bold* aviators?

To my mind there are three primary events that need to occur off the cat on a normal Case I launch.

- **Provide Optimum Lift.** Level wings and set the nose where it provides optimum AOA for your type of aircraft. Even if you have had a catastrophic dual-engine failure on the stroke, this step alone, because of the excess energy provided by the cat, will provide a second or two within the ejection envelope.
- **Reduce all possible drag.** In most cases, this means starting the landing gear retraction sequence. Note that in most airplanes flown around the ship today, raising the flaps from the TAKEOFF position has a greater effect on reducing lift than on decreasing drag. This is in violation of the first rule. Leave the flaps down until you are accelerating outbound. (Follow procedures in your NATOPS.)
- **Conform to Ship Procedures.** Here is where a controlled turn away from the basic recovery course will help prevent those nasty midair collisions off the bow. By this time, you have determined that the airplane is flying, and a gentle roll rate doesn't throw all that spoiler surface into the wind.

This whole sequence of events does not have to take over a few seconds. As you can see, the second and third steps occur simultaneously. But by keeping those concepts in mind, you can help make the catapult launch evolution safer for yourself and your crew. These concepts can be applied to night, Case III launches as well, although we all know that Bernoulli's Law loses its effect after dark.

The aggressive, above-average aviator is one who provides for optimum control of his aircraft and safety for his crew at all times. Granted, there are times when it is necessary and important to fly to the edges of the envelope, but I do not think right off the catapult is one of them. There are plenty of opportunities around the ship to display your professionalism and airmanship – overhead in formation, in the break, and on the ball, to name a few. But off the cat, a safe, controlled transition from a static hunk of metal to a flying machine should be *Sierra Hotel* enough for any aviator.

"The SAR Buoy"

By AW2 David Ramos
VP-11

THE P-3 community's channel 15 emergency sonobuoy is being replaced by the relatively new AN/SSQ-83 which is specifically designed for search and rescue operations. The SSQ-83 SAR Buoy is designed to assist in marking the location of an aircraft crash site, a sinking ship, or survivors at sea. The buoy operates for 60 hours on a frequency of 172.75 MHz. In addition, there is a flashing light, a dye marker, a continuously radiating RF beacon, and a microphone for one-way voice communication.

The SSQ-83 can be launched from aircraft equipped to launch A-size sonobuoys (P-3s, H-2s, H-3s, and S-3s) and can also be deployed by hand over the side from ships or liferafts. To become familiar with its operation requires very little training, so check it out in NAVAIR 28-500-SSQ, and disseminate the word to all your flyers.

It's there if you need it, as is all the survival equipment aboard the P-3 aircraft. The SSQ-83 is an important and effective piece of equipment. Let's hope you'll never have to use it.

Some information for passengers

Ready for a helo flight?

By LCDR Richard B. Bohman
HC-3

NAVY helicopter passenger volume is steadily increasing as more helicopters enter the fleet and as awareness of their versatility increases. The chances of Navy personnel, particularly in the aviation community, flying as helicopter passengers are very high. Although helicopter safety has improved significantly over the years, there are inherent dangers associated with helo flight. It is surprising to me, an H-46 pilot, that some of my least prepared passengers are from the aviation community. I attribute this phenomenon to complacency bred from familiarity with flight in general and lack of knowledge of helo flight specifically. Hopefully, this article will provide some information which will overcome these safety hurdles.

Two of my greatest concerns for my passengers are that they are as well protected as possible in the unlikely event of a fire and that they can safely egress from the helicopter should it ditch (a controlled water landing) or crash at sea.

Over the years, there have been many people who have survived the impact and breakup of an aircraft crash with relatively minor injuries only to be killed or severely burned by the accompanying fire. Better clothing choices could have saved some of those lives and greatly reduced the severity of burn injuries among those who did survive. The best fire protection available short of a crash crew hot suit is nomex clothing, which is fire retardant. If nomex is not available or suitable, loose layers of natural fiber clothing are the next best choice, making sure as much skin as possible is covered. Man-made polyester fabrics have been hailed as wonder fabrics because of their durability and wash-and-wear properties. Unfortunately, they also have the other not-so-wonderful property of melting at temperatures associated with fires.

When polyester is exposed to a fire while being worn next to the skin, it will melt and fuse to the skin, creating a severe burn which is extremely difficult to treat. Natural fibers such as cotton and wool burn fairly cleanly and offer much more protection against a fire. Shirts should be long-sleeved. If natural fiber outer garments cannot be worn, cotton underwear (wool tends to itch) should be worn. Sturdy leather footwear (boots with steel toes are best) will both protect feet from fire and aid in escape through jagged debris. A special note to our female passengers – please do not wear high heels, hose, or skirts. Those female passengers who wore these garments and survived the collision of the two 747s on the runway in the Canary Islands incurred very severe leg burns and had great difficulty exiting the crash area.

Prior planning is your best insurance for survival in the event of ditching or a crash at sea. If you are a frequent passenger, I highly recommend 9D5 underwater egress training at NAS Pensacola (soon available at NAS Miramar). Prior to a helo flight, you will receive a safety briefing. Make sure you understand where emergency exits are and how to operate them. Once in the aircraft, check your seatbelt. Release it once to ensure it functions properly and that you know how to use it. Make sure you have a helmet and a life preserver (if the flight will be over water). Next, note the relative locations of all exits, and plan egress routes to them based on handholds which you could find and identify underwater with little or no visibility.

In the event of a ditching or crash at sea, it is very important to prepare for impact by tightening your seatbelt, leaning forward in your seat, and holding your head. *(See adjoining article, "A Position You Can Live With." – Ed.)* If the aircraft remains floating upright, follow the directions of the aircrew. Should the aircraft roll inverted (most do, due to a high center of gravity) or fill with water, take a deep breath and wait until the water finishes surging into the cabin, then hold on to your previously identified reference point with one hand and release your seatbelt with the other. Follow your preplanned route to the nearest exit. It is imperative always to keep a handhold reference until clear of the aircraft, because it is a very disorienting experience. Once clear of the aircraft, inflate your flotation equipment and swim to the surface. **(Caution: Do not inflate your life preserver before exiting aircraft.)** Once on the surface, group with other survivors and enter liferafts.

Hopefully, these suggestions will better prepare you for your next helicopter flight (or any other military or civilian fixed-wing passenger flight) and you will be able to enjoy the wonders of rotary-winged flying. ◄

A position you can live with

Upright position for occupants with shoulder harnesses.

Forward-folded knee-chest position for passengers with lap belt only.

RESEARCH has proven your chances of surviving a crash and escaping serious injuries are far greater if you assume a protective position which reduces flailing of the head, arms, and upper torso during abrupt deceleration. The protective crash position differs somewhat depending on where you sit, your restraint system, and type of aircraft.

If your restraint system is composed of a lapbelt and shoulder harness, the recommended crash position is to sit as nearly upright as possible, lapbelt snug, shoulder harness in manual lock, and without slack between the chest and the straps. With the shoulder harness locked, the body is relatively stabilized to spread crash forces over a longer, more tolerant area of the body when horizontal forces are generated. With vertical forces, the locked shoulder harness ensures a vertically erect, stable, and untwisted spinal alignment as well. This position is similar to that recommended for ejection, i.e., head and shoulders placed firmly against the back of the seat. The upright position permits the vertical impact to be absorbed by the spinal column in the direction in which it was designed to absorb impacts, the vertical axis. If you are not doing the flying, place your feet on the floor, not on the pedals, and keep your hands off the controls.

If your restraint system consists of a *lapbelt only,* assume the forward-folded knee-chest position. This position is attained by bending forward at the waist with the feet firmly on the floor and the chest resting on the knees. The position is held by folding and locking the arms around and behind the thighs with the hands and placing the head face-down between the knees. This position will likely reduce flailing of the head, arms, legs, and upper torso during abrupt horizontal deceleration, thus preventing injury. It will prevent whiplashing of the spine, decreasing the possibility of fractures. Further, it will tend to reduce the loads sustained by the occupant's seat and thus decrease the likelihood of seat failure. The forward-folded knee-chest position is recommended regardless of whether you sit facing forward, sideward, or rearward on present military aircraft troop seats (except those which have shoulder harnesses).

Sitting upright without a shoulder harness is not recommended because of the difficulty in remaining upright by force of muscles alone. The forward-folded knee-chest position prevents flailing of the upper torso and possible injury caused by forceful flexing, because the spine is already flexed and held in position by the locked arms. Finally, the forward-folded knee-chest position offers a smaller target for dislodged missiles within the aircraft or objects that may penetrate your livable space.

It doesn't matter whether the crash forces are vertical or horizontal. The crash position is the same.

Adapted from U.S. Army *Flightfax*

SURVIVAL/SIGNALING PROCEDURES

By CDR Jack Greear, MSC
APTU Norfolk
NAVREGMEDCEN, Portsmouth, VA

THE following procedures describe the use of signaling devices while in the liferaft.

They are not intended to prescribe any given step in order of priority. That of course would be dictated by the immediate situation of the survivor. The oxygen mask may be removed at any point but has been left in place in some scenes to emphasize the need to be prepared to signal rescue aircraft. (When seconds are critical, signaling is considered more important than removing the oxygen mask.)

These techniques are being published in advance of the NAVAIR-00-80T-101 Survival/Egress Manual so they will get to the fleet as soon as possible and so the project manager may receive any possible feedback on these procedures before NAVAIR-00-80T-101 is finally printed. Please forward any comments to: Commanding Officer, Naval Regional Medical Center (Code APTU-230), Portsmouth, VA 23708.

1. If desired, remove the equipment container from the lower dropline.

Slip the equipment container back through the loosened larks head knot to remove.

2. Once the equipment container is removed, the lower half of the RSSK can be lowered back into the water.

The equipment container can be secured to the helo lift ring for easy access to its contents.

3. Screw the cartridge flare into the launcher while keeping the flare pointed in a safe direction.

Warning: Ensure the pencil-type launcher is in the cocked position.

NATOPS evaluator for signaling devices is AE1 C.L. Byrd, SAR ATMM Staff (HC-16), Pensacola, FL and PR1 R. A. Kelley, APTU Norfolk.

4. Hold the launcher at about a 45-degree angle, pull back on the trigger, and release. Each cartridge flare has a minimum 4½-second duration and can be launched to about 200 feet.

5. The SDU-5/E strobe light can be attached to the helmet by mating the hook and pile (Velcro) tape. This frees the hands for using other signaling devices while allowing the light to flash up into the sky and reflect off the helmet.

6. *Be prepared:*
Here the survivor is prepared for the immediate use of a variety of signaling devices.

7. Mirror Signaling:
(a) Reflect sunlight onto nearby surface (raft, hand, etc.).
(b) Slowly bring mirror up to eye level and look through sighting hole. You will see a bright spot. This is the aim indicator.
(c) Hold mirror close to the eye, and slowly turn and manipulate it so the bright light spot is on the target.
(d) Even though no aircraft or ships are in sight, continue sweeping the horizon. Mirror flashes may be seen for many miles, even in hazy weather.

Continued

Mk-13 Mod 0 marine smoke and illumination signal (used to attract the attention of SAR aircraft and to give wind drift direction).

Identification:

Night	Day
(a) Red color cap	(a) Orange color cap
(b) Protrusions on cap	(b) No protrusions on cap or case
(c) Protrusions on case	
(d) Metal washer attached to lanyard	

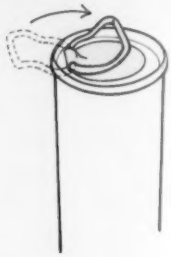
Burns approximately 20 seconds with an intensity of 3,000 candlepower.

Note: Flare incorporating paper vice plastic end caps will have no protrusions on cap.

8. Remove cap from desired end.

Flip pull ring over signal rim to break the lead seal.

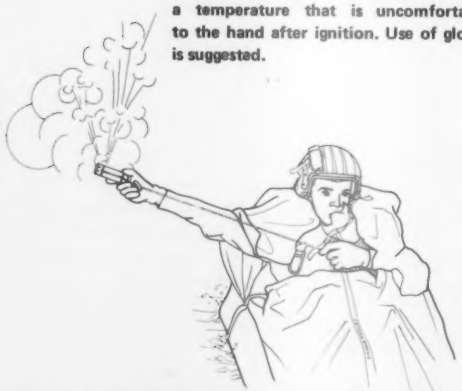
If the seal doesn't break, push ring until it bends against the case.



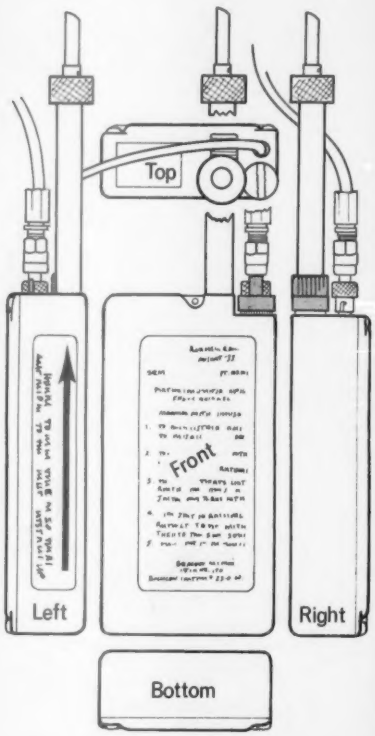
9. Flip bent ring back to original position and use as a lever to break the seal.

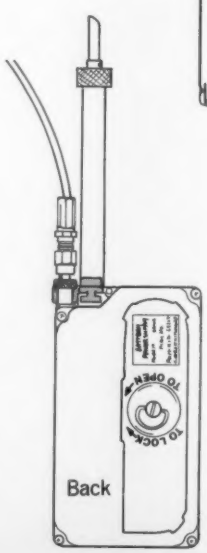
10. Ignite signal by a quick pull on the ring.

Warning:
The Mk-13 Mod 0 signal may reach a temperature that is uncomfortable to the hand after ignition. Use of gloves is suggested.



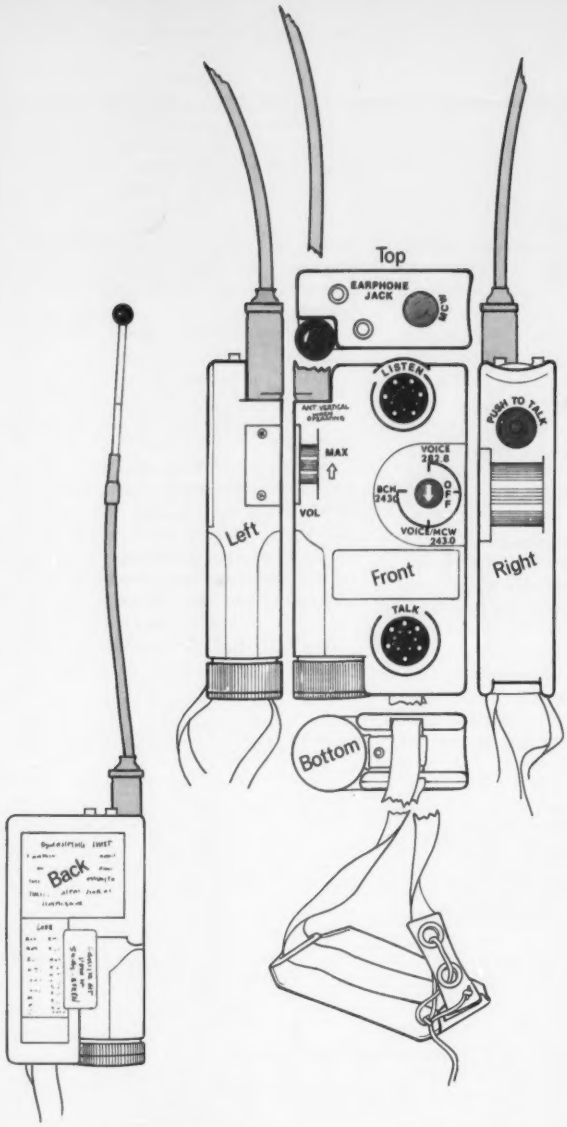
11. The ignited Mk-13 Mod 0 must be held at arm's length, downwind, no more than shoulder-high, and over the side of the liferaft to prevent damage to the raft from hot residue.





12. The AN/URT-33 is designed to automatically transmit a swept-tone signal on 243.0 MHz when the ejection seat leaves the floor of the aircraft.
Note:
The URT-33 must be turned *off* when using the PRC-90 on 243.0 MHz to prevent interference from the URT-33.

Note:
Do not point antenna directly at the receiving aircraft.



13. AN/PRC-90
The PRC-90 is a dual-channel transmitter/receiver survival radio capable of transmitting (voice modes) up to 60 miles (line of sight, depending on the receiving aircraft's altitude). It operates on Guard (243.0 MHz) or SAR primary operating frequency (282.8 MHz) with a mode for a swept-tone signal on 243.0 MHz only. Transmission of the beacon and Morse code can be up to 80 miles.

Artwork by Carolyn Dinicola Fawley

14. Weather shield in place with strobe light and reflective tape as signaling devices. Shield is essential to reduce hypothermia effects.

LETTERS
to the editor

To Err Is Human . . .

But Not Acceptable in Editors

NAS Whidbey Island – The officers and men of VAQ-133 were shocked by the erroneous description of the cover picture on your DEC '80 cover. We have studied the picture carefully and it clearly is a *Prowler*. We can only conclude your bag has a hole in it.

For your enlightenment, find enclosed one EA-6B *Prowler* Identification Gouge. (See adjoining photograph.)

LCDR J. L. "Pirate" Hershberger

Wright Patterson AFB – Perhaps I am still on the emotional high that sustained me through last ORE's recce lectures. Perhaps I am experiencing reflexive anger developed during 10 years of second-class citizenship as a "cats-and-dogs" pilot. Regardless, I express to you my disappointment that the beautiful aircraft on your DEC '80 cover is improperly identified on page 1 as a mundane A-6 *Intruder*.

LCDR David L. Rutherford

NAS Whidbey Island – More than a few red faces should be lurking in the dark corners of the offices of APPROACH magazine after the *faux pas extraordinaire* of calling that EA-6 on the DEC '80 cover an A-6 *Intruder*.

You have joined the ranks of those who have installed tailhooks backwards, missed them on preflight, or bingoed to the beach because they couldn't land aboard the carrier with the hook that way.

Oh well, no one's perfect.

LT James H. Engler
VA-128

NAS Whidbey Island – The DEC '80 issue of APPROACH was as interesting, informative, and as professional as always, but I would like to point out one minor error. The aircraft on the cover was identified as an A-6 *Intruder*, when, in fact, it is an EA-6B *Prowler*.

It is understandable that an uninitiated observer could confuse the two aircraft, so I will discuss some of the more pertinent recognition features of the *Prowler*:

First, note the smooth, graceful, sleek styling with careful attention given to aerodynamic flow. The passenger section has been extended to comfortably(?) accommodate four adult-size passengers in this 2+2 version of the basic A-6. All seats are individually adjustable for maximum comfort. Gold-laminated glass is standard. The vertical stabilizer-mounted "football" is not only aesthetically pleasing but functional as well, for it houses the most sophisticated "Fuzz Buster" radar receiver available. The optional fuel tanks (pictured on stations 2 and 4) increase the cruising range per tank full of unleaded fuel. (Individual mileage may vary depending on the driving habits of the operator.) The ram-air turbine-powered aerodynamic shapes (pictured on stations 1, 3, and 5) are part of the optional sport package and are interchangeable for anticipated driving conditions/hazards. The subtle protrusions from the pylons of stations 1 and 5 identify this model as the slightly older EXCAP (expanded capability) version of the *Prowler*. The top-of-the-line ICAP (improved capability) version does not have these protrusions. Twelve percent loans and factory rebates are still available. Contact your nearest Grumman Aerospace Corporation dealer or EA-6B squadron for additional details.

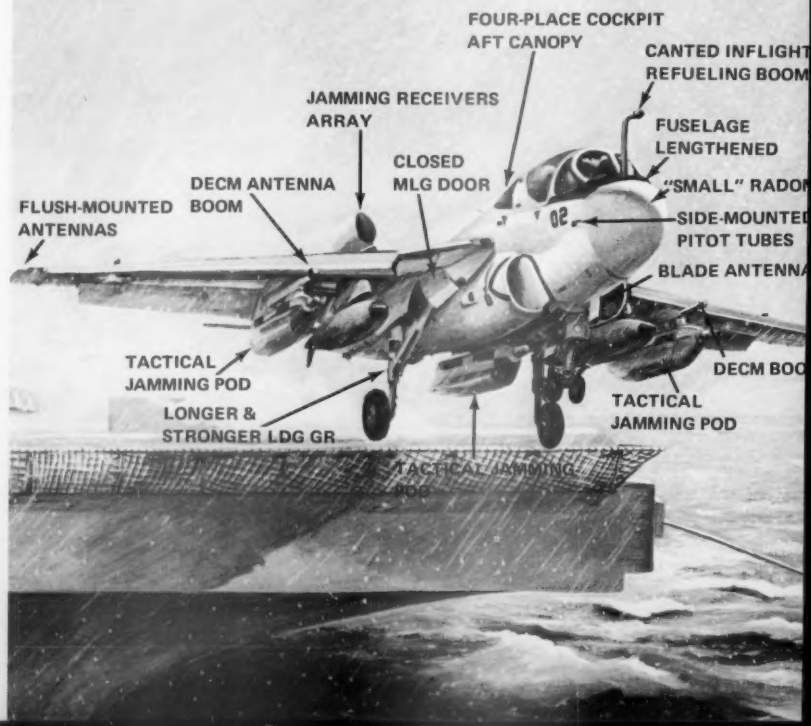
LCDR R. R. "Rock" Penfold
Medium Attack Tactical Electronic
Warfare Wing, U. S. Pacific Fleet

NAS Whidbey Island – Shame on you! Your DEC '80 cover clearly shows an EA-6B *Prowler* (pods and all) taking a Yuletide cat shot. Yet on the inside, you've identified it as an A-6 *Intruder*. I'm sure *no one else* has noticed, though. So, we'll just keep this one between ourselves.

LCDR Pat McCartney
VA-128

Norfolk, VA – I enjoyed your DEC '80 issue and, in particular, Blake Rader's cover painting. I was, however, somewhat

EA-6B PROWLER IDENTIFICATION GOUGE COURTESY OF VAQ-133 "WIZARDS." (HIGHLIGHTS FEATURES EXCLUSIVE TO EA-6B COMPARED TO A-6E.)



APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, VA 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

distressed to find your cover credit identified that long, sleek EA-6B *Prowler* as her stubby forerunner, the A-6 *Intruder*. Keep up the good work.

CAPT James H. Stokoe
U. S. Atlantic Fleet

• I sincerely appreciate the above letters, as well as the letters we received from the following individuals: CAPT C. T. Whitley, CAPT R. E. Kirby, CDR J. W. Dickson, LCDR Arb Rylant, AMS1 R. L. Kowell, YN1 John Bates, AD2 Robert Carpenter, AD3 John Roberts, and the Men of VAQ-131.

No excuses are offered, only an apology to those who fly the "lovely" EA-6B *Prowler*. My deepest regrets are expressed to those flying the A-6 *Intruder!* Sorry, guys, I screwed up.

While I have the attention of the VAQ community, I do have one question: What does that "Q" really mean? – Ed.

Cut the Chit-Chat

Boston, MA – I am a reserve naval aviator with 25 years of experience and have been a professional aircraft accident investigator for the past 18 years. I have just finished reading *"What? Hank Killed?"* in the JAN '81 issue of your excellent publication. Oddly, I was only halfway through the article when I had an eerie feeling concerning the conclusion, as the accident was similar in nature to one years ago in which I participated in the subsequent investigation. It involved the loss of 89 lives (passengers and crew).

Following the accident, company pilots were convinced that there had to have been a mechanical or electronic malfunction, as the crew had flown the same instrument approach in similar company aircraft "hundreds of times." In my judgment, it was well in excess of 1,000.

As the flight approached the destination airport, the crew was given a weather observation that would have dictated the usual instrument approach (ILS),

breakout, and contact daylight landing. Simple, except that the weather at the approach end of the runway was far from the observed and, in fact, was nearly zero/zero. To complicate matters, the flight passed over the outer marker at a higher than normal altitude. Now the stage was set – a well-qualified and experienced crew was executing an approach that they had done many times before, except that the altitude was initially abnormally high, fully expecting to make a visual landing to a runway that they had seen many times before. Not much sweat to that.

The similarities to Hank's accident and this one became evident. Both aircraft were equipped with cockpit voice recorders (CVRs), and both CVRs revealed that there was a lot of unnecessary chit-chat among the crews throughout the entire approach; chit-chat that was totally unrelated to the subject at hand – getting the airplane safely onto the runway.

NATOPS procedures and Flight Operations Manuals are established to provide safe and systematic operation of aircraft and to assure to the utmost that once an aircraft has left the chocks, it and its occupants will be safely returned to Mother Earth. Any deviation from these procedures, especially during the final moments of an instrument approach, will always result in degradation, to whatever the degree of the distraction, of the built-in safety assurances that these proven manuals would otherwise provide.

The answer is clear – when manning "the front office," do so only with that as the primary objective. Forget the hen-parties and gossip sessions. Save them for some enjoyable and well-earned happy hour.

David W. Graham
Chief Aeronautical Inspector
Massachusetts Aeronautics Commission

Don't Forget the Weatherman!

NAS Pensacola – Reference the FEB '81 APPROACH article "Standdowns – Where to Go for Help." Perhaps through some oversight you didn't include your friendly weather office, but they (the weather folks) definitely should be included as a source of good, sound information for safety standdowns.

Although Navy weather offices aren't called weather anymore (we are all Navy Oceanography Command Detachments), we still provide weather data and forecasts for the Navy.

AGCS J. S. Shay
NAVOCEANCOMDET

Alcohol Information

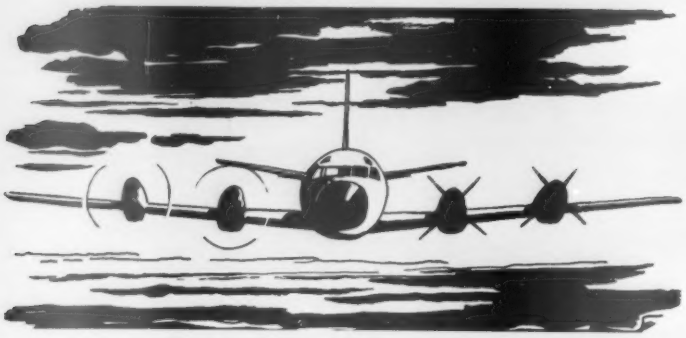
NAS Jacksonville – Your article "Safety Standdowns – Where to Go for Help" (FEB '81) was interesting and informative. However, I notice that you suggest "Drive-safe and/or alcohol lectures from the highway patrol." In fact, the U. S. Navy probably has more in-house expertise on alcohol and its effects than most states' highway patrols! Logical and readily available sources of such information include the local NASAP office, the Counseling and Assistance Center, or in the Norfolk, Jacksonville, and San Diego areas, the Alcohol Rehabilitation Centers. Finally, most Naval Hospitals (NRMCs) have at least one alcohol specialist assigned.

NASAP is the only one of the above *directly* concerned with drinking and driving, but there are other hazards relative to the use and misuse of alcohol which are pertinent to aviation safety.

We are proud of the education/prevention arm of our program and are always willing to share our knowledge and experience with fleet commands.

CDR L. M. Stevenson, Jr.
Commanding Officer
Naval Alcohol Rehabilitation Center

"Don't believe it always happens to the other guy."



By LT Craig Luigart
VP-11

YOU hear the title phrase a lot as a student in the RAG and as a nugget in your squadron, but what does it really mean? I think the following incident sheds some light on its true implications.

The P-3 had completed a normal preflight and departure from Lajes, Azores, a place not known for excellent weather
32 or good divert facilities. The aircraft proceeded to station in the North Atlantic. Because the flight was scheduled to be in excess of 10 hours, and with a high possibility of a weather divert to Rota, the aircraft had been loaded to max fuel weight.

As the third pilot aboard, now awaiting my second pilot check, I thought that I had experienced almost everything in the training syllabus, and to me, it seemed that a lot still *happened to the other guy* or happened only on training flights. I was in the left seat as we descended on station. The second pilot was in the right seat, and the PPC was seated on the forward radar cabinet. The No. 1 engine was secured for fuel conservation, and all seemed normal as we began to discuss the evening's tasking.

Things, as we know, are often not as they seem, for as we passed FL190, a chip light illuminated on the No. 2 engine. As covered in the flight station brief, the flight engineer determined that all other indications remained stable and recommended the relight of engine No. 1 prior to securing No. 2. As I commenced climbout and departure from station, the second pilot, along with the PPC, called for the relight of No. 1.

"Blade Angle." "Rotation." It seemed that was the last normal evolution that occurred that night. The RPM on No. 1 immediately rose to 75 percent, then degraded to 30 percent prior to commencing a rapid climb to as yet undetermined limits.

"E handle No. 1!" Thank God for a phrase that seemed to come from the syllabus. The prop feathered normally and the emergency checklist was completed. We now faced an obvious question with only little guidance supplied by NATOPS . . . "E handle unless a greater emergency exists."

We faced a possible two-engine-out situation, both on the same side, with a gross weight not entirely conducive to a long two-engine transit. A divert to Rota would require an additional 3 hours of flight, thereby requiring an immediate dumping of fuel. It was decided to leave No. 2 on the line.

After leveling off at the assigned emergency altitude, we attempted to contact Lajes Airways, with little success. I then vacated the left seat, surrendering it to the PPC for the remainder of the transit and the landing, something which I was more than pleased to do. We notified OPCON of our problem, and while continuing to Lajes, proceeded to brief all possible emergencies related to the possible failure of No. 2.

The performance charts were repeatedly reviewed for the two-engine-transit fuel required for a Lajes to Rota divert. One hour out of Lajes, it was determined that a fuel dump would be possible. As fuel dumping commenced, the weather in Lajes (now 40 miles away) was reported poor but improving rapidly. Then it happened again! RPM on No. 2 began rising with audible speed increases. NATOPS procedures were completed to no avail and No. 2 was secured as the RPM passed 103.5 percent. Two engines out on the same side, poor weather, and at night – not ideal circumstances.

As we neared our point of landing, Approach Control was contacted. Weather had improved and an uneventful two-engine landing was completed at Homebase.

Well, believe me, it can happen to anyone! It's always there, just waiting. Know your NATOPS procedures, because some day you could be the "other guy"! ◄

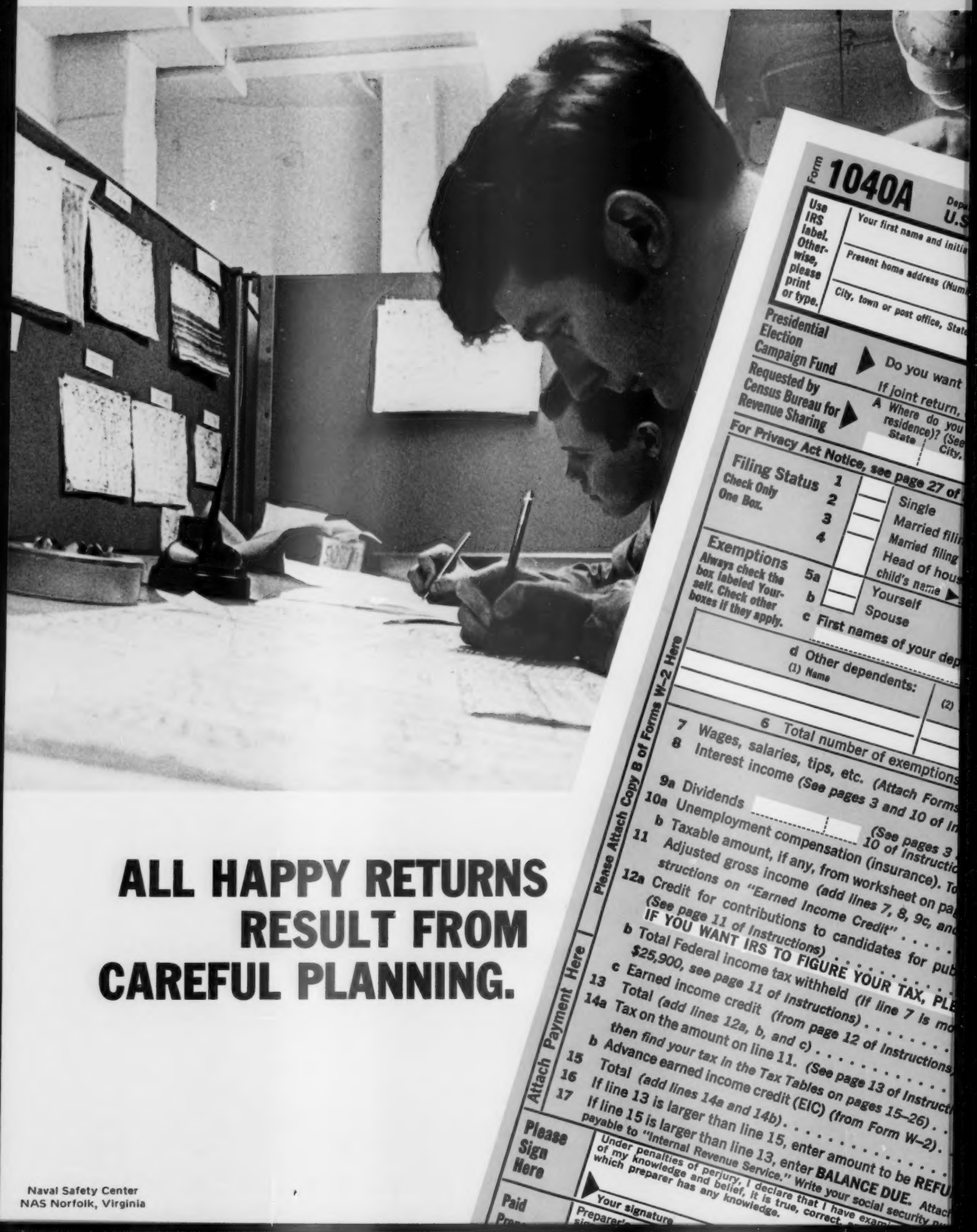
☆U.S. GOVERNMENT PRINTING OFFICE: 1981—735-003/3

RIP

FOD has no respect for rate or rank.

Poster idea contributed by AW3 Jeffrey S. Edel, USNR

Naval Safety Center
NAS Norfolk, Virginia



ALL HAPPY RETURNS RESULT FROM CAREFUL PLANNING.

Naval Safety Center
NAS Norfolk, Virginia